

CORROSION PROTECTIVE LACQUER FOR BRAKING SURFACES OF  
BRAKE DISKS AND/OR BRAKE DRUMS, CORROSION PROTECTIVE  
COATING PRODUCED THEREFROM, AND A METHOD FOR  
REMOVING THE CORROSION PROTECTIVE COATING

FIELD OF THE INVENTION

The present invention relates to a corrosion protective  
lacquer for braking surfaces of brake disks and/or brake  
drums, a corrosion protective coating made thereof, and a  
5 method for removing the corrosion protective coating as it is  
used in the shop of the applicant.

BACKGROUND INFORMATION

For protection from corrosion, a brake disk and/or brake  
10 drum is generally lacquered. For this a lacquer is used which  
can be removed by braking, that is, removed by the abrasive  
action of the brake pad in the area of the braking surface.  
This solution has proven particularly favorable in vehicles  
designated for overseas transportation and with replacement  
15 brake disks or drums.

Despite the advantages of convention methods, braking  
surfaces of brake disks or braking surfaces treated with it  
still demonstrate sensitivities during transportation,  
especially because of the aggressive salt air during overseas  
20 transportation. High quality assurance costs and partial  
reworks are connected with this.

It is an object of the present invention to provide a  
corrosion protective lacquer with which a corrosion protective  
coating may be produced which makes possible a corrosion  
25 protection even in overseas transportation, less rework and  
cost reduction, and which may be removed as simply as  
possible.

## SUMMARY

The above and other beneficial objects of the present invention are achieved by providing a corrosion protective lacquer, a corrosion protective coating and a method as described herein. Access of oxygen to the braking surface is prevented by covering at least the braking surfaces with a corrosion protective lacquer according to the present invention having a high proportion of protective substances that react with oxygen.

In order to achieve the desired effect, a protective substance proportion of at least 30% by volume, for example, at least 50% by volume or at least 70% by volume, is practical in the lacquer or clearcoat that is otherwise, for example, of customary type.

These protective substances may include, for example, non-alkaline and non-earth alkaline metals such as, for example, zinc, elemental aluminum or their oxidizable compounds, such as, for example, FeO. Additionally, phosphorus and/or phosphates are also suitable.

During removal by braking, the substances are, at least partially, for example, pressed and/or rubbed into the surface of the braking surface, where they remain and further effect protection of the metallic surface from oxidation. This removal by braking may be performed at any time, for example, however, before delivery of an automobile to a customer, such as on a roller test stand. Because one obtains corrosion protective action even after the removal of the corrosion protective coating by braking, the removal of the corrosion protective coating may be performed, for example, before mounting the brake disk, shortly after its manufacture, so that only a brake disk is mounted that is ready and protected from corrosion.

By the introduction of the protective substances into the surface rough spots, pores and score marks of the braking surface, the normal surface roughness of the braking surfaces, which results due to the natural pores of the brake disk material and/or grinding or turning score marks, is reduced at the same time. The result is a lesser depth of corrosion, whereby in turn the probability of brake judder is lessened at the same time.

In order to achieve a particularly satisfactory result, the average particle size of the protective substances may be smaller than the maximum roughness and/or the average pore width and/or the average score mark size of the braking surface.

A metal lacquer having a zinc dust proportion of approximately 80% by volume may be a cost-effective solution.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a cross-sectional view of a brake disk having a combined brake drum and a corrosion protective lacquer applied thereto.

Figure 2 is a cross-sectional view of the brake disk illustrated in Figure 1 having the corrosion protective lacquer solidified to a corrosion protective coating.

Figure 3 is a magnified view of a braking surface after removal of the corrosion protective coating.

#### DETAILED DESCRIPTION

Figure 1 is a cross-sectional view of a brake disk 1 having a combined brake drum. The whole surface of brake disk 1 is provided with a corrosion protective lacquer 4. Since the corrosion protective lacquer may be identical to a conventional lacquer except for protective substances 10 (illustrated as individual dots), it is possible to apply it

to the surface of brake disk 1 using a normal spraying and/or dipping method.

After application, corrosion protective lacquer 4 is dried or allowed to set or cured into corrosion protective coating 6 (see Figure 2). Since during curing of the corrosion protective lacquer the solvent, for example, water, escapes from coating 6, the proportion of the protective substances 10 in corrosion protective coating 6 increases as compared to their proportion in corrosion protective lacquer 4. As illustrated in Figure 2, this may be seen in the greater density of the points and coating 6.

Due to the high proportion of protective substances 10 of, for example, more than 70% by volume, even a deep crack may not endanger braking surface 2 of the brake disk and/or braking surface 3 of the brake drum through corrosion, since the oxygen is intercepted by protective substances 10, whereby they themselves react in the form of an oxidation.

Figure 3 is a magnified view of braking surface 2, 3 after removal of corrosion protective layer 6 by braking. It may be seen that protective substances 10 have been inserted into pores 7 and score marks 8 or other recesses 9.

This arrangement reduces the normal roughness of braking surface 2 and, along with that, the corrosion depth to be expected. Furthermore, at least initially, the rust attack in a vehicle standing still for a long time is reduced, since in this case, corrosion protection by self-oxidation of protective substances 10 remains in effect. That is, the inserted protective substances 10 act as a sacrificial anode.